

CLAIMS

What is claimed is:

1. An apparatus comprising:
an electronic component that generates heat;
a body that encloses the electronic component, and
has a bottom panel;
a heat receiving portion thermally connected to the
electronic component;
a heat radiating portion that radiates the heat
received by the heat receiving portion, the heat
radiating portion forming a part of the bottom
panel; and
a liquid cooling path inside which liquid coolant is
circulated, the liquid cooling path being
thermally coupled to the heat receiving portion
and the heat radiating portion.
2. The apparatus according to claim 1, wherein the heat
radiating portion includes an air channel thereon.
3. The apparatus according to claim 2, further
comprising a fan arranged in the bottom panel, which
moves air over the air channel.

4. The apparatus according to claim 3, wherein the exterior surface of the air channel has a corrugated configuration.
5. The apparatus according to claim 4, wherein the fan is adapted to draw from the surrounding ambient airspace.
6. The apparatus according to claim 4, wherein the fan is adapted to draw from the interior of the body.
7. The apparatus according to claim 4, wherein the fan is adapted to draw simultaneously from the surrounding ambient airspace and the interior of the body.
8. The apparatus according to claim 1, wherein the bottom panel includes an inclined portion forming an obtuse angle with a remaining portion of the bottom panel, and the inclined portion has a part of the heat radiating portion.
9. The apparatus according to claim 8, wherein the liquid cooling path is arranged to transfer heat from the liquid coolant to the inclined portion.

10. The apparatus according to claim 1, further comprising a pump which circulates the liquid coolant inside the liquid cooling path.
11. The apparatus according to claim 10, wherein the heat receiving portion is formed outside the pump.
12. An apparatus for cooling an electronic component that generates heat, the apparatus comprising:
 - a body that encloses the electronic component;
 - a bottom panel that forms a part of the exterior surface of the body ;
 - means for providing an air channel in the bottom panel;
 - means for transferring heat from the electronic component to a liquid coolant and from the liquid coolant to the bottom panel; and
 - means for moving air between an interior of the body and a surrounding ambient airspace such that a substantial portion of the air is moved over an exterior surface of the air channel.
13. The apparatus according to claim 12, wherein the exterior surface of the air channel has a corrugated configuration.

14. The apparatus according to claim 12, wherein the bottom panel further includes an inclined portion forming an obtuse angle with a remaining portion of the bottom panel.
15. The apparatus according to claim 14, further comprising means for transferring heat from the liquid coolant to the inclined portion.
16. The apparatus according to claim 12, wherein air is moved from the surrounding ambient airspace to the interior of the body.
17. The apparatus according to claim 12, wherein air is moved from the interior of the body to the surrounding ambient airspace.
18. The apparatus according to claim 12, wherein air is moved simultaneously from the surrounding ambient airspace, from the interior of the body, and to the surrounding ambient airspace.
19. The apparatus according to claim 12, further comprising means for circulating the liquid coolant between the electronic component and the bottom panel.

20. An apparatus comprising:

a body having a bottom panel;

an electronic component enclosed by the body;

a heat receiving portion thermally coupled to the
electronic component;

a heat radiating portion including an air channel,
the heat radiating portion forms a part of the
bottom panel and radiates heat received by the
heat receiving portion; and

a liquid cooling path thermally coupled to the heat
receiving portion and the heat radiating portion.